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| 09/844,635 | 04/28/2001 | Bharti Temkin | 12001-105 | 1591 |

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PERKINS, SMITH & COHEN LLP
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EXAMINER

CHUONG, TRUC T

| ART UNIT | PAPER NUMBER |
|----------|--------------|
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2179

DATE MAILED: 11/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/844,635

Applicant(s)

TEMKIN ET AL.

Examiner

Truc T. Chuong

Art Unit

2179

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 September 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 July 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

This communication is responsive to the Amendment, filed 09/09/05.

Claims 1-5 are pending in this application. In the communication, claims 1 and 3 are independent claims. This action is made final.

The text of those sections of Title 35, U.S. Code is not included in this action. It can be found in a prior office action.

Drawings

New corrected drawings in compliance with 37 CFR 1.121(d) are required in this application because the latest drawings filed 07/30/01 are blur and still not clear enough to show details corresponding to the specification. Applicant is advised to employ the services of a competent patent draftsman outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. The corrected drawings are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

1. Claims 3-5 are rejected under 35 U.S.C. 102(e) as being anticipated by Ross et al. (U.S. Patent No. 6,608,628 B1).

As to claim 3, Ross teaches a method of developing and utilizing complex and precise haptic virtual objects for user in surgical training comprising the steps of:

creating a cursor with attributes of movement within multiple layers of graphic display to create or modify one or more virtual objects (The system includes a virtual collaborative clinic component (VCC), which allows the users simultaneously view and manipulate the high-resolution, three-dimensional images of the object (multiple-layers object, e.g., col. 9 lines 33-35, and figs. 9A-B) in real-time by using the force-feedback (haptic) devices and technology, e.g., col. 11 lines 20-64);

selecting a virtual object with said cursor (VCC, e.g., col. 11 lines 20-64);

modifying said virtual object to create a volumetric three-dimensional poly-mesh form that includes a plurality of layers, wherein a computing system converts said virtual object into said poly-mesh form without a user without writing any computer code (the entire process of modifying the haptic model as mentioned in col. 9 lines 33-35, figs. 9A-B and col. 11 lines 20-64 clearly shows that only the user works with the computer applications and tools of the VCC, and there is no computer coding involved);

modifying a surface stiffness of one or more layers of said poly-mesh form (by using the force-feedback haptic devices to interact with the virtual object, e.g., col. 11 lines 35-43); and

modifying a static and dynamic friction of one or more layers of said poly-mesh form (the haptic models can be dynamically selected and transmitted of user inputs applied at each of the client systems is coordinated, to allow the image displayed on each of the client systems to be updated in real-time in response to user inputs applied at each other client system, e.g., Summary).

As to claim 4, it is a method claim of system claim 2. Note the rejection of claim 2 below.

As to claim 5, Ross teaches the method of claim 3, as implemented such that a plurality of properties of said virtual object can be easily modified in order to closely represent human tissue properties (The system includes a virtual collaborative clinic component (VCC), which allows the users simultaneously view and manipulate the high-resolution, three-dimensional images of the object (multiple-layers object, e.g., col. 9 lines 33-35, and figs. 9A-B) in real-time by using the force-feedback (haptic) devices and technology, e.g., col. 11 lines 20-64).

Claim Rejections - 35 USC § 103

2. Claim 1-2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ross et al. (U.S. Patent No. 6,608,628 B1).

As to claim 1, Ross teaches a computer interface system for providing a haptic virtual environment for use in surgical training and/or surgery simulation comprising:

(a) means for providing a cursor with attributes of movement within multiple layers of a graphic display to create or modify one or more virtual objects (The system includes a virtual collaborative clinic component (VCC), which allows the users simultaneously view and manipulate the high-resolution, three-dimensional images of the object (multiple-layers object, e.g., col. 9 lines 33-35, and figs. 9A-B) in real-time by using the force-feedback (haptic) devices and technology, e.g., col. 11 lines 20-64);

(b) means for generating a haptic representation of said one or more virtual objects directly from a graphical representation of said one or more virtual objects, wherein said one or more virtual objects comprise a plurality of layers that are

represented by a three-dimensional poly-mesh form (mesher, e.g., col. 6 lines 43-65, and col. 11 lines 20-64, and figs. 5, 9A-D);

(c) means for creating, modifying, and saving haptic properties, and save the setup into data files (Modification made to the haptic model by changing the shared variables cause the variables and the new value to be placed in the queue, e.g., col. 13 lines 29-44, the database server stores all information of the haptic models, e.g., col. 4 lines 53-65), and said one or more virtual objects for creating a heuristic database and creating or modifying such a heuristic database (Ross shows the features of creating, modifying, saving haptic properties into the database as mentioned above; however, Ross does not clearly show that the database is a heuristic database. It would have been well known and obvious to a person of ordinary skill in the art at the time of the invention to create, modify, and save haptic properties into a heuristic database/other databases to help the user to keep records for future retrievals of studying or experimenting the haptic models in the medical field (e.g., col. 12 lines 55-65); and

(d) means for selecting all or a portion or portions of said haptic properties from said heuristic database for the modeling of haptic virtual environments, the system as a whole being constructed and managed do that a user can create said haptic virtual environment without writing any computer code (the entire process of modifying the haptic model as mentioned in col. 9 lines 33-35, figs. 9A-B and col. 11 lines 20-64 clearly shows that only the user works with the computer applications and tools of the VCC, and there is no computer coding involved).

As to claim 2, Ross teaches the system of claim 1 wherein said heuristic database comprises one or more properties of static friction, dynamic friction, stiffness, and damping components (by using the force-feedback haptic devices to interact with the virtual object, e.g., col. 11 lines 35-43).

Response to Arguments

3. Applicant's arguments filed in an Amendment have been fully considered but they are not persuasive.

Applicants argued and Examiner disagrees for the following reasons:

a. Ross cannot logically create a cursor with attributes of movement within multiple layers.

Ross clearly teaches the system includes a virtual surgical cutting tool that enables the user to simulate the removal of a piece or layer of a displayed object, such as a piece of skin or bone, view the interior of the object, manipulate the removed piece (e.g., Abstract, col. 4 lines 25-44, col. 5 lines 30-40, and figs. 5, 9A-D); therefore, there are multiple layers of the virtual object that are allowed the user to manipulate/work/remove with the virtual object. Ross also teaches the attributes of movement to manipulate/cut/remove the layers (e.g., col. 2 lines 20-30, and col. 9 lines 29-48).

b. Ross does not show how to create the haptic virtual environment without writing any computer code.

Ross uses the mesh generation unit to create the mesh form object or 3D virtual object based on the data from a CT or MRI scan or the like without using any computer code to generate the virtual model because the images are directly collected from CT or MRI scan, and the process does not involve the system for generating those images (e.g., col. 4 lines 25-37, or the scanned data (without any coding to create the data) can be sent back to the Earth, col. 11 lines 39-45).

c. Ross fails to teach or suggest feeling the objects existing in the virtual environment.

Ross clearly teaches the virtual environment with images and the force-feedback (haptic) devices to detect or feel the virtual objects (e.g., col. 11 lines 35-50); therefore, the haptic environment or virtual object of Ross has to have the defined properties or haptic attributes such as stiffness, static, dynamic friction, etc. to be able to feel or getting feedback from the virtual object.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Basdogan et al. (U.S. Patent No. 6,704,694 B1) teach haptic environment with 3D objects in medical field wherein the user can interact with the virtual object (cols. 2-25 and figs. 2-17A).

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

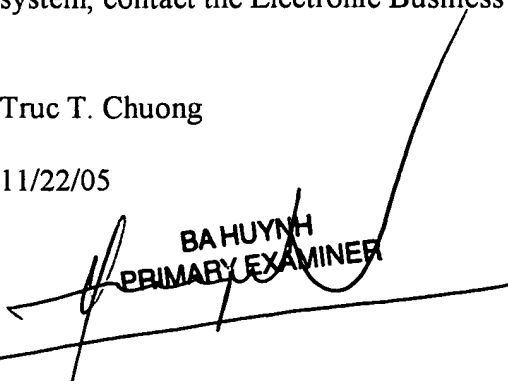
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Truc T. Chuong whose telephone number is 571-272-4134. The examiner can normally be reached on M-Th and alternate Fridays 8:30 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Weilun Lo can be reached on (571) 272-4847. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Truc T. Chuong

11/22/05



BA HUYNH
PRIMARY EXAMINER